MAPPING SELECTIVE DSCP VALUES TO GTP-U

FIELD OF THE INVENTION

[0001] The present invention relates to apparatuses, methods and a computer program product for mapping selective DSCP values to GTP-U.

RELATED BACKGROUND ART

[0002] The following meanings for the abbreviations used in this specification apply:

APN Access Point Name

BSC Base Station Controller

BSSGP Base Station Subsystem GPRS Protocol

DSCP DiffServ Code Point

GERAN GERAN GSM/EDGE Radio Access Network

GGSN Gateway GPRS Support Node

GPRS General Packet Radio Service

[0003] GSM Global System for Mobile communications

GTP GPRS Tunneling Protocol

[0004] GTP-U GTP-User plane.

GW Gateway

IP Internet Protocol

PDN Packet Data Network

[0005] PDN-GW Packet Data Network Gateway (also P-GW)

PDP Packet Data Protocol

PMIP Proxy Mobile IP

S-GW Serving Gateway

TDF Traffic Detection Function

UE User Equipment

[0006] 3GPP is currently working on "Service Identification for RRC Improvements in GERAN" (SIRIG). It is envisioned that the core network informs the GERAN radio network when downlink IP packets relating to specific applications are detected via deep packet inspection within the core network. The GERAN radio network will use this information to configure radio bearers according to the needs of the detected applications, e.g. by assigning a suitable number of timeslots for the bandwidth requirements of the application.

[0007] Within the core network, the deep packet inspection will either be performed by a GGSN/PDN-GW or by a standalone Traffic Detection Function (TDF) (see TS 23.203).

[0008] It has been agreed within 3GPP CT4 as a working assumption that the GGSN/PDN-GW using the GPRS Tunneling Protocol (GTP) (TS 29.060) will transfer the information towards the SGSN within a new extension header within the GTP user plane packets used to transfer the user plane relating to the specific application. If a standalone TDF is used, it will transfer the information to the GGSN/PDN-GW as DiffServ Code Point (DSCP) marks within the IP header of the inspected user plane packets and the GGSN/PDN-GW provides an interworking to GTP-U.

[0009] A GGSN using Proxy Mobile IP (PMIP) will transfer the information to the Serving-GW as DSCP marks within the IP header of the inspected user plane packets, and the Serving-GW will forward the information towards the SGSN within a new extension header within the GTP user plane packets used to transfer the user plane.

[0010] The SGSN will transfer the information on to the GERAN BSC using an extension of the Base Station Subsystem GPRS Protocol (BSSGP) (TS 48.018).

[0011] 3GPP is also studying improvements for IP traffic handling for other radio networks than GERAN and might thus decide to use the new GTP-U header extension towards other radio networks in the future.

[0012] The DSCP header is a mandatory part of the IP header and always present. It is normally used for requesting priority treatment within IP routers.

[0013] The new GTP-U header extension, as described above, will increase the overall size of a GTP-U package by 8 byte and thus lead to extra bandwidth requirements where GTP is used. If the DSCP IP header is always interworked, the new GTP-U extension header will also be supplied for user plane packets that do not relate to applications that require special treatment, which leads to an unnecessary waste of resources.

SUMMARY OF THE INVENTION

[0014] Embodiments of the present invention address this situation and aim to reduce the use of resources in connection with the new extension header.

[0015] According to a first aspect of the present invention an apparatus is provided which comprises

[0016] at least one interface unit configured to provide connection to at least one network, and

[0017] a processor configured

[0018] to receive a packet via the at least one interface unit,

[0019] to detect a service identification in the packet,

[0020] to decide based on the detected service identification whether a tunnel protocol extension header is to be generated or not, and,

[0021] when the tunnel protocol extension header is to be generated, to generate the tunnel protocol extension header, to encapsulate the received packet with the generated tunnel protocol extension header and to forward the encapsulated packet.

[0022] According to a second aspect of the present invention, an apparatus is provided which comprises

[0023] an interface unit configured to provide connection to a network, and

[0024] a processor configured

[0025] to receive a packet via the interface unit,

[0026] to detect whether the packet relates to a specific application, and,

[0027] when it is detected that the packet relates to the specific application, to insert a service identification in the packet based on the application, or,